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TANAIDACEA (CRUSTACEA:PERACARIDA) OF THE GULF OF MEXICO. I. INTRODUCTION AND AN ANNOTATED BIBLIOGRAPHY OF TANAIDACEA PREVIOUSLY REPORTED FROM THE GULF OF MEXICO

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ABSTRACT A brief summary of the biology and a historical review are presented for the Tanaldacea. An annotated bibliography is provided for published reports and records of Tanaidacea from the Gulf of Mexico.

This is the first in a series of publications on the Tanaidacea to be published in this journal. The purpose of this series of papers will be to provide a definitive summary of the tanaidaceans from the Gulf of Mexico. Each of the papers to follow, beginning with this volume (Sieg et al. 1982) will deal with range extensions, redescriptions, and descriptions of new species from the Gulf of Mexico. Terminology used in species descriptions and redescriptions will follow the preferences of the senior author of each paper in the series, but will generally conform to that of Sieg (1980).

The order tanaidacea is a minor group of the Eumalacostracean crustaceans which are characterized by having the carapace fused to the first two thoracomeres with the first thoracopod being a maxilliped and the second thoracopod a cheliped. Because the females brood their young in a marsupium, or brood pouch, they are generally accepted as members of the superorder Peracarida. Tanadiceans are a cosmopolitan group of infaunal, epibenthic or epifaunal forms occurring from the intertidal to the abysall zone. The few species reported from freshwater habitats have been shown to be euryhaline marine species (Gardiner 1975, Sieg 1981). Tanaidaceans are small, ranging in length from 1 to 37 mm with an average size of 2–3 mm. Tanaidaceans are normally deposit feeders with detritus and associated organisms probably their main food, although one group (Kalliapseudidae) are filter feeders. The gonads are double. Oviducts open laterally at the base of the fourth pair of pereiopods. The vas deferentia have a common vesicula seminalis which is ventromedian on the last thoracic segment. Hermaphroditism including both protandry and protogyny as well as gonochorism can occur and sexual dimorphism is common. The first antennae can differ in the two sexes as can the shape of the head, the mouth parts, the chelipeds, the first pair of pereiopods, and less frequently the pleopods and uropods. Females may produce several broods, each preceded by a molt in which external morphology may undergo alteration. The eggs develop in a marsupium formed by one or four pairs of oöstegites. Newly hatched larvae lack the first pair of pereiopods and the pleopods. The young undergo two larval (Manca) stages and a neuter stage.

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Gammarus heteroclitus Viviani, 1904, was probably the first tanaidacean described, but normally *Cancer gammarus talpa* Montagu, 1808, is accepted as the first described species. Leach (1814) placed the latter species in a new genus, *Apseudes*, in the Amphipoda. Milne-Edwards (1828) placed his genus *Rhoea*, equivalent to *Apseudes*, and a new genus *Tanais* in the Isopoda. Dana (1952) created a new group, Anisopoda, to which he assigned the tanaidaceans and certain isopods considering it to be an intermediate group between Isopoda and Amphipoda. Bate (1868) combined the tanaidaceans with certain isopod taxa into a group he called *Isopoda aberrantia*. Sars (1882) placed the tanaidaceans with the Isopoda under the tribe Chelifera. Claus (1888) created an independent order between the Isopoda and Cumacea that he called Anisopoda after the name proposed by Dana (1852). Hansen (1895) agreed with the affinities but suggested the currently used name Tanaidacea for the order. The view of the Tanaidacea as an independent order is generally accepted by most carcinologists; however, Schram (1981) recently suggested that the tanaidaceans are aligned with the spelaeogriphaceans and the cumaceans, and he relegated them to suborders of the order Hemicaridea, which together with the order Thermosbaenacea, comprise the cohort Brachycarida. Sieg (1982) did not follow Schram's scheme. He viewed Schram's grouping of the Isopoda and Amphipoda in the order Acaridea as inconsistent with many recent studies on the comparative morphology and anatomy of the Peracarida. He pointed out that if the Acaridea is part of the Arthostraca, the sister group of the Brachycarida, one would have to accept the parallel evolution of the unique brood pouch, a concept that cannot be followed without refuting the large amount of data supporting the monophyletic origin of the Peracarida.

The first published report of Tanaidacea for the Gulf of Mexico was that of Richardson (1905) for *Apseudes propinquus* Richardson, 1902, off the west coast of Florida. It was not until 61 years later that a second record for the order, *Apseudes spinosus* Sars, 1858, was reported by Dawson (1966) from the northern Gulf. Based on personal collections, and published and unpublished reports, Ogle (1977) listed 18 species from the Gulf of Mexico. The species mentioned by Ogle as "*Apseudes* n. sp. being

described from Florida" is now known to be *Halmyrapseudes bahamensis* Băcescu and Guţu,1974 (Sieg, Heard and Ogle 1982) and the *Zeuxo* sp. is *Z. maledivensis* Sieg,1980 (Sieg 1980). Tanaidaceans were the third most abundant group of benthonic, macroinvertebrate crustaceans taken in the Mississippi-Alabama-Florida, Bureau of Land Management study conducted during 1975–1978 (R. W. Heard, unpublished data). Tanaidaceans were also the third most abundant crustacean food item taken from deepwater fish by Bright (1970). Members of the order have been taken more commonly in Gulf waters with the increase in sampling programs during the past decade. The lack of tanaidaceans collected in early sampling programs in the Gulf was probably due to inadequate sampling methods employed.

The taxonomy of some groups of tanaidaceans at present is unclear and confusing. This is due to the many morphological changes that a given species can exhibit dependent on sex, age and molt stage, the ignorance of specific characters within each taxa, and upon the uncertain position of the group when it was first established. At present there are four suborders of the order Tanaidacea, one of which, the Anthracoraridomorpha, is represented only by fossils (Sieg 1982). The extant species belong to the Neotanaidomorpha, the Tanaidomorpha, and to the super family Apseudoidea, which is part of the suborder Apseudomorpha. These suborders contain 18 families representing approximately 600 described species. No definitive work on the Tanaidacea of the Gulf of Mexico is presently available and records are limited to only a few published works. The purpose of this series of publications is to produce much new information on the zoogeography, taxonomy, systematics and ecology of the Tanaidacea occurring in the Gulf of Mexico.

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